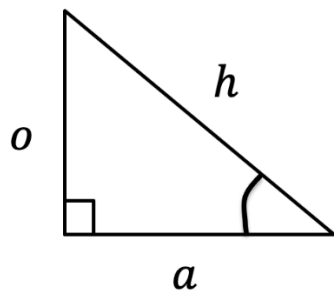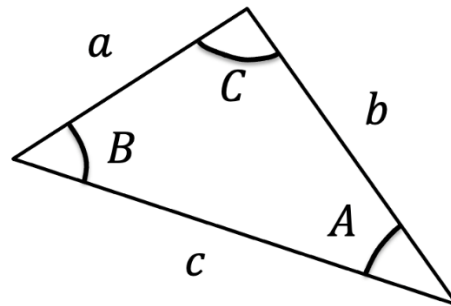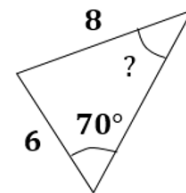| Right-Angled Triangles: | Non-Right-Angled Triangles: |

We label the sides a, b, c and their corresponding OPPOSITE angles A, B, C

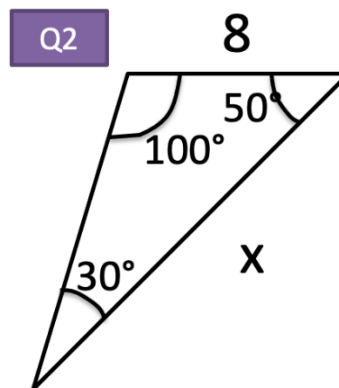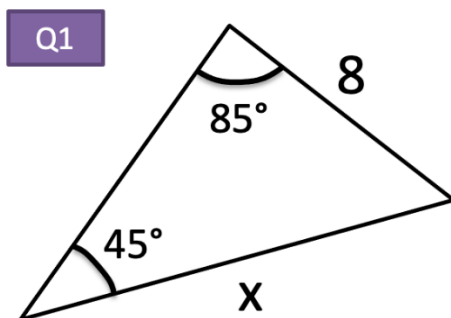| You have	You want	Use
#1: Two angle-side opposite pairs	Missing angle or side in one pair	Sine rule
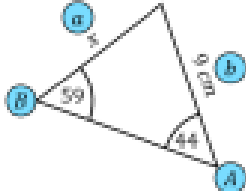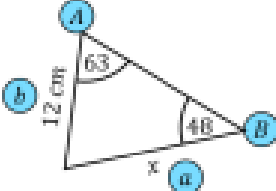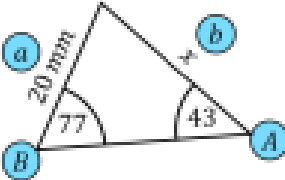
Sine Rule:
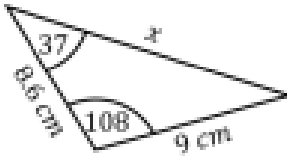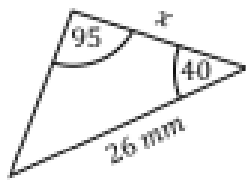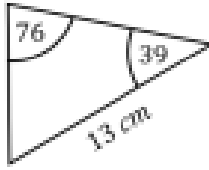$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Examples

Q1

Q2

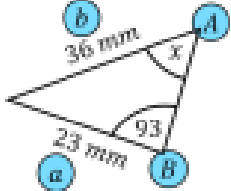| Labelled diagram	Substitute into formula	Rearrange formula	Length (1dp)
	$$\frac{x}{\sin 44} = \frac{9}{\sin 59}$$	$$x = \frac{9 \times \sin 44}{\sin 59}$$	
	$$\frac{x}{\sin 63} = \frac{12}{\sin 48}$$		
	$$\frac{x}{\sin 65} = \frac{13}{\sin 76}$$		
		$$x = \frac{3.5 \times \sin 36}{\sin 68}$$	

2

Examples 2

5

85°

x°

6

8

126°

x°

10
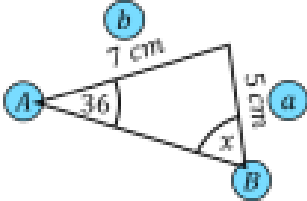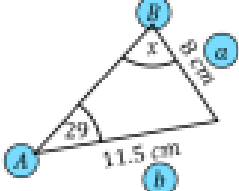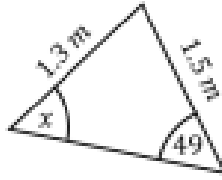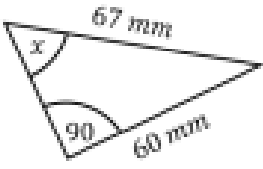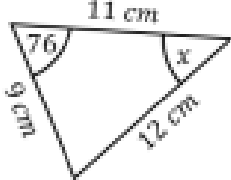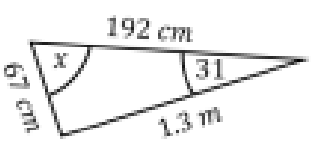
Test your understanding

Find the missing angle.

(a)

d

4.8 cm

43

6.2 cm

(b)

8 cm

e

5 cm

61

(c)

f

9.1 cm

67

7.9 cm

3
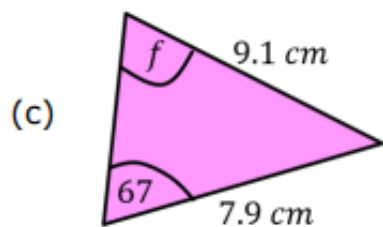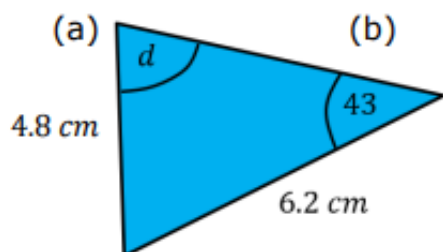
Labelled diagram	Substitute into formula	Rearrange formula	Acute Angle (1dp)
b, 7 cm, A, 36, 5 cm, a, x, B	$\dfrac{\sin 36}{5} = \dfrac{\sin x}{7}$	$\sin x = \dfrac{7 \times \sin 36}{5}$	$x = 55.4°$
b, 36 mm, A, x, 93, 23 mm, a, B	$\dfrac{\sin x}{23} = \dfrac{\sin 93}{36}$		
B, x, 9 cm, a, 29, A, 11.5 cm, b			
1.3 m, 1.5 m, x, 49			
67 mm, x, 90, 60 mm			
11 cm, 76, x, 9 cm, 12 cm			
192 cm, x, 31, 67 cm, 1.3 m			
		$\sin x = \dfrac{5 \times \sin 47}{10}$	

4

Extension

Problem Solving

10

Determine the angle θ, giving your answer to 3 significant figures.

Determine the length of x, giving your length correct to 3 significant figures.